

REMARKS

The Office Action rejected claims 1, 2, 6, 7, 13, 15, 16, 21, 23 and 24 under 35 U.S.C. § 103(a) as being obvious from Blaeser et al. (U.S. Patent No. 5,187,625, hereinafter Blaeser) in view of Oberg (U.S. Patent No. 4,991,045).

Blaeser discloses a suspension assembly that includes a load beam 22 consisting of three layers: a 1 mil thick stainless steel layer 12, a 1 mil thick viscoelastic material 13, and a 1 mil thick stainless steel layer 14. To form the assembly, the viscoelastic material is applied to one of the stainless steel layers as either a spray or a tape. The other steel layer is then placed on top of the viscoelastic material and pressure is applied to bond the steel layers to the viscoelastic material.

Oberg discloses a suspension assembly that utilizes plastic and steel pieces. Under one embodiment of Oberg, the plastic pieces are attached to the steel pieces using plastic stakes that extend from the plastic pieces through holes in the steel pieces. Heads are formed on the stakes by melting the plastic either using ultrasonic frequencies or heat. In a second embodiment, the steel is placed within a wall around the edge of the plastic and the wall is then melted over the edge of the steel. Oberg does not show or suggest applying the plastic material to the steel pieces using an adhesive.

Independent claim 1 is directed to a storage device with a suspension assembly that includes a metal material defining a portion of the suspension and a composite material having a higher stiffness to weight ratio than the metal material. The composite material is bonded directly to the metal material by an adhesive such that the same adhesive layer is bonded to both the composite material and the metal material. The adhesive layer is thinner than the composite material.

Like claim 1, independent claims 13 and 21 include limitations to bonding a composite material directly to a metal

layer of a suspension assembly using a single adhesive layer. In claims 13 and 21, the adhesive layer is thinner than the metal layer.

The combination of Blaeser and Oberg does not show or suggest the invention of claims 1, 13 or 21 because together these references do not suggest adhesively applying a composite material directly to a metal material on a suspension using a single layer of adhesive that is thinner than the metal material or the composite material.

Blaeser does not show the use of an adhesive layer that is thinner than the two metal layers. Instead, Blaeser clearly states that the viscoelastic layer is the same thickness as the metal layers. (See col. 2, lines 32-39). This thick layer is needed to absorb energy. (See Col. 2, lines 46-50) As such, those skilled in the art would not be motivated to make the viscoelastic layer thinner than shown in Blaeser.

Oberg does not show or suggest adhesively applying a composite material directly to a metal material but instead shows that the composite material should be connected to the metal material using heat staking.

As shown by Oberg, the prior art did not consider bonding composite materials to a metal suspension using an adhesive. One reason for this was cost. Using an adhesive requires additional materials and additional processing steps over Oberg. A second reason is that it was widely believed that it would be difficult to control the flow of the adhesive on the parts and that adhesive would seep through holes in the suspension and over the edges of the suspension. This would greatly complicate the manufacturing process because it would require further steps to remove the excess adhesive. Since suspensions are relatively delicate, any such additional processing is undesirable and costly.

However, the present inventors have found that counter to the general beliefs at the time, an adhesive could be controlled and would not flow outside of the boundaries of the suspension. This represents a new and inventive step over the prior art that was not recognized as being possible before the present invention.

Note that if adhesively applying a composite material to a metal material on a suspension was obvious, Oberg probably would have suggested it as one technique for connecting the two pieces. Instead, Oberg describes a technique that requires the melting of the composite material at selected points.

Since neither reference shows adhesively applying a stiffening member to a metal piece of a suspension using a single layer of adhesive that is thinner than the stiffening member or the metal piece, their combination does not show or suggest the invention of claims 1, 13 and 21 or claims 2, 6, 7, 15, 16, 23 and 24, which depend therefrom.

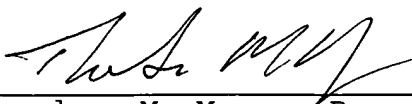
In light of the comments above, claims 1, 2, 6, 7, 13, 15, 16, 21, 23 and 24 are patentable over the combination of Blaeser and Oberg. Reconsideration and allowance of the claims is respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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